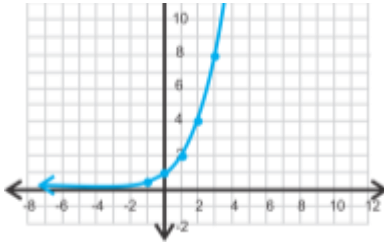


Exponential Growth: $f(x) = 2^x$

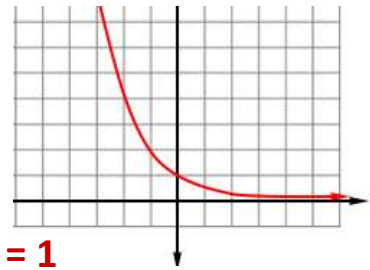
Graph increases from left to right



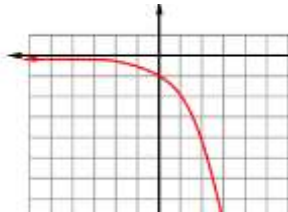
y intercept is always 1 because $a^0 = 1$

Exponential Decay: $f(x) = (\frac{1}{2})^x$

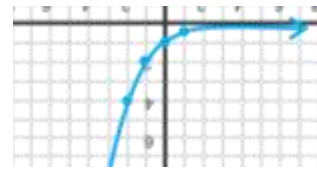
Graph increases from left to right



$f(x) = -2^x$ reflects across x-axis



$f(x) = -(\frac{1}{2})^x$ reflects across x-axis



y intercept is always -1

- 1) For the given function, identify the transformation from the parent function $y = b^x$.

$$y = -6 \cdot 3^x$$

Base is 3 and 6 is vertical stretch

Identify the appropriate transformation, if applicable, relative to stretching or compression. Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- A. The graph is compressed by a factor of . (Type an integer or a fraction.)
- B. The graph is stretched by a factor of 6. (Type an integer or a fraction.)
- C. The graph is not stretched or compressed.

Identify the appropriate transformation, if applicable, relative to reflection. Choose the correct answer below.

- A. The graph is reflected across the x-axis. Negative in front reflects across the x-axis
- B. The graph is reflected across the y-axis.

Identify the appropriate transformation, if applicable, relative to vertical translation. Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- A. The graph is translated up units. (Type an integer or a fraction.)
- B. The graph is translated down units. (Type an integer or a fraction.)
- C. The graph is not translated up or down.

Identify the appropriate transformation, if applicable, relative to horizontal translation. Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- A. The graph is translated to the right units. (Type an integer or a fraction.)
- B. The graph is translated to the left units. (Type an integer or a fraction.)
- C. The graph is not translated to the left or to the right.

2) Graph the function.

$$y = -9^x$$

Choose the correct graph on the right.

3) Graph the function.

$$y = \left(\frac{1}{2}\right)^x$$

Choose the correct graph on the right.

Decay with no reflection

4) Graph the function.

$$y = -2^x$$

Choose the correct graph on the right.

Growth reflected across x-axis

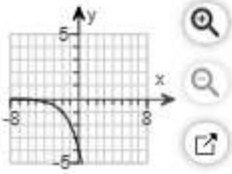
- 5) Graph the function as a transformation of its parent function.

$$y = -(0.5)^{x-2}$$

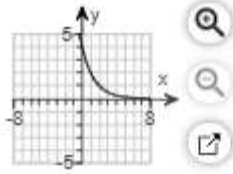
Choose the correct graph below.

Decay reflected across x-axis

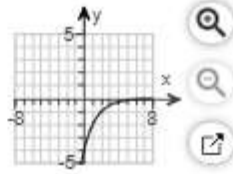
A.



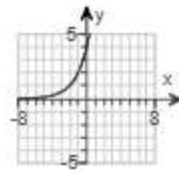
B.



C.



D.



- 6) Use the graph of $y = e^x$ on a graphing calculator to evaluate the following expression to four decimal places.

$$y = e^{-5}$$

in calculator: 2nd In makes e[^](-5)

$$e^{-5} = .0067 \text{ (Round to four decimal places as needed.)}$$

- 7) Use the graph of $y = e^x$ on a graphing calculator to evaluate the following expression to four decimal places.

$$y = e^3$$

in calculator: 2nd In makes e[^](3)

$$e^3 = 20.0855 \text{ (Round to four decimal places as needed.)}$$

- 8) Find the amount in a continuously compounded account for the following condition.

Pe^{rt} rate is decimal

Principal, \$2000; Annual interest rate, 5.6%; time, 4 years $2000e^{.056 \cdot 4}$

The balance after 4 years is \$ 2502.14 .

(Round the final answer to the nearest cent as needed. Round all intermediate values to five decimal places as needed.)

- 9) Find the amount in a continuously compounded account for the following condition.

Pe^{rt} rate is decimal

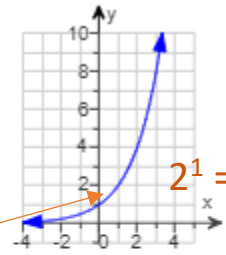
Principal, \$4000; Annual interest rate, 5.5%; time, 2 years $4000e^{.055 \cdot 2}$

The balance after 2 years is \$ 4465.11 .

(Round the final answer to the nearest cent as needed. Round all intermediate values to five decimal places as needed.)

- 10) The parent function for the graph to the right is of the form $y = ab^x$. Write the parent function. Then write a function for the translation indicated.

translation: right 3 units, up 5 units



$$2^1 = 2 \quad (1,2)$$

The parent function for the graph shown is $y = 2^x$.

(Simplify your answer. Use integers or fractions for any numbers in the expression.)

Where graph is at $x = 1$

The function for the translation indicated is $y = 2^{x-3} + 5$.

(Simplify your answer. Use integers or fractions for any numbers in the expression.)

Right 3 up 5